0298-2012

WATER QUALITY MANAGEMENT PLAN (WQMP)

CITY OF NEWPORT BEACH BUILDING DEPARTMENT
APPROVAL OF THESE PLANS DOES NOT CONSTITUTE EXPRESS OR IMPLIED
AUTHORIZATION TO CONSTRUCT ANY BUILDING IN VIOLATION OF ANY PROVISIONS
OF THE ORDINANCES, PLANS, AND POLICIES OF THE CITY OF NEWPORT BEACH. IT
DOES NOT GUARANTEE THAT THESE PLANS ARE, IN ALL RESPECTS, IN
COMPLIANCE WITH CITY BUILDING AND ZONING ORDINANCES. THE CITY OF
NEWPORT BEACH RESERVES THE RIGHT TO REQUIRE ANY ADDITIONAL
CORRECTIONS, STRUCTURE OR ENVIRONMENT AUTHORIZED BY THESE PLANS
TO BE OR AFTER CONSTRUCTION, IF NECESSARY TO COMPLY WITH THE
ORDINANCES AND POLICIES OF THE CITY OF NEWPORT BEACH.
BY: _____ (SIGNATURE)
SIGNATURE _____ DATE _____

SINGLE FAMILY RESIDENCE
1014 POLARIS DRIVE
NEWPORT BEACH, CALIFORNIA

Prepared for:
ROBERT MURPHY
1014 POLARIS DR
NEWPORT BEACH, CA, 92660

March 30, 2012

REGISTERED PROFESSIONAL ENGINEER
LUIS F. VESGA
C68782
Exp. 9-30-13
CIVIL
STATE OF CALIFORNIA

Prepared by:

EDIFICA USA LLC

10 Tumbleweed St, Trabuco Canyon, CA, 92679. Phone: 909 3428301. info@edificausa.com

EDU PROJECT NO. 11010

OWNER'S CERTIFICATION

This project-specific Water Quality Management Plan (WQMP) has been prepared for:

Mr. Robert Murphy by ESI, LLC for the project known as 1014 Polaris Drive, Newport Beach, California.

This WQMP is intended to comply with the requirements of City of Newport Beach which includes the requirement for the preparation and implementation of a project-specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity.

The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Newport Beach Storm Water Quality Ordinance.

If the undersigned transfers its interest in the subject property/project, its successor in interest the undersigned shall notify the successor in interest of its responsibility to implement this WQMP.

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature

7-3-12
Date

ROBERT MURPHY
Owner's Printed Name

OWNER
Owner's Title/Position

Contents

APPENDICES

I. Project Description

Project Owner: **Robert Murphy**
1014 Polaris Drive
Newport Beach, California 92660
Telephone: (909) 559-1116

WQMP Preparer: S. Pat Rymer
41659 Date Street, Suite 102
Murrieta, CA 92562
Telephone: (951) 461-3111

Project Site Address:	1014 Polaris Drive Newport Beach, California
Planning Area/ Community Name/ Development Name:	Newport Beach Robert Murphy
APN Number(s):	117-721-31
Thomas Bros. Map:	2011 San Diego Thomas Guide, Page 889, C-6
Project Watershed:	Santa Ana – Newport Bay (Unit 901.13)
Sub-watershed:	Upper Newport Bay Hydrologic Sub Area (901.26)
Project Site Size:	0.17 Acres

Standard Industrial Classification (SIC) Code:

Formation of Home Owners' Association (HOA) or Property Owners Association (POA):

Y ☐ N ☒

Additional Permits/Approvals required for the Project

AGENCY	Permit required
State Department of Fish and Game, 1601 Streambed Alteration Agreement	N☒
State Water Resources Control Board, Clean Water Act (CWA) section 401 Water Quality Certification	N☒
US Army Corps of Engineers, CWA section 404 permit	N☒
US Fish and Wildlife, Endangered Species Act section 7 biological opinion	N☒
Other *(please list in the space below as required)*	

II. Site Characterization

Land Use Designation or Zoning: Single family residential R-1

Current Property Use:

The current property of 0.17 +/- acres is occupied with a single-story house covering approximately 72% (0.12 +/- acres). An in-ground pool is located in a central court yard with associated concrete decking. The remaining portion of the site is covered by concrete walkways and decking. A boat dock is located at the rear or south side of the property. A 4-5 foot high wall surrounds the property on two sides and will remain. Sewer and water is provided by pressurized public pipeline. Drainage is by sheet flow to surface drains and conveyed off site by an existing 4-inch pvc drain line to the northwest to Polaris Drive. Water from the roof is directed via roof gutters and down drains at several locations.

Proposed Property Use:

The current house will be demolished and replaced with a single-family residential development. The 1 & 2-story house will have a 1st floor area of 5845 square feet or 81.3% of the total lot. The remaining area will be a landscape buffer along all sides except the north. The attached 1st floor garage and driveway access is at the front or north side of the lot adjacent to Polaris Drive. Total impervious area at build-out will be 84.5%.

Site drainage is accomplished utilizing a combination of 2 "flow-through" storage basins and 114 linear feet of 6-inch PVC drain line. Water will exit the site in the northwest corner and connect to the existing storm drain in Polaris Drive to the north via the concrete gutter.

Availability of Soils Report: No.

Phase 1 Site Assessment: No.

Receiving Waters for Urban Runoff from Site

The runoff from the site is via a proposed 4-inch PVC storm drain line along the east and west, and a 1.5 foot wide "flow-through" natural floored drainage channels along the east and west side of the building. The existing 4-5 foot high walls are to remain and prevents any runoff from the site except by the proposed drainage devices.

The water enters the existing storm gutter on Polaris Drive and is directed to off-site treatment BMP's before entering the Upper Newport Harbor receiving waters.

Receiving Waters for Urban Runoff from Site

Receiving Waters	303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Polaris Drive Storm drain	none	Urban Storm Drain	0.03 miles
Upper Newport Beach Main Ocean Channel	Pathogens, bacteria	Marine Recreation	0.02 miles

III. Pollutants of Concern

Per Section A-7 and A-7.11 of the City of Newport WQMP and California Regional Water Control Board – Santa Ana Region the following pollutants are possible at this residential site.

Bacteria and Viruses - Bacteria and Viruses are ubiquitous microorganisms that thrive under certain environment conditions. Their proliferation is typically caused by the transport of animal or human fecal wastes from the watershed. Water, containing excessive bacteria and viruses, can alter the aquatic habitat and crate a harmful environment for humans and aquatic life. Also, the decomposition of excess organic waste causes increases growth of undesirable organisms in the water.

Metals – The primary source of metal pollution in storm water is typically commercially available metals and metal products. Metals of concern include cadmium, chromium, copper, lead, mercury, and zinc. Lead and chromium have been used as corrosion inhibitors in primer coatings and cooling tower systems. Metals are also raw material components in non-metal products such as fuels, adhesives, paints, and other coatings. At lower concentrations naturally occurring in soil, metals may not be toxic. However, at higher concentrations, certain metals can be toxic to aquatic life. Humans can be impacted from contaminated groundwater resources, and bioaccumulation of metals in fish and shellfish. Environmental concerns, regarding the potential for release of metals to the environment, have already led to restricted metal usage in certain applications (OC 2003).

Nutrients – Nutrients are inorganic substances, such as nitrogen and phosphorus. Excessive discharge of nutrients to water bodies and streams causes eutrophication, where aquatic plants and algae growth can lead to excessive decay of organic matter in the water body, loss of oxygen in the water, release of toxins in sediment, and the eventual death of aquatic organisms. Primary sources of nutrients in urban runoff are fertilizers and eroded soils.

Pesticides – Pesticides (including herbicides) are chemical compounds commonly used to control nuisance growth or prevalence of organisms. Relatively low levels of the active component of pesticides can result in conditions of aquatic toxicity. Excessive or improper application of a pesticide may result in runoff containing toxic levels of its active ingredient (OC 2003).

Organic Compounds – Organic compounds are carbon-based. Commercially available or naturally occurring organic compounds are found in pesticides, solvents, and hydrocarbons. Organic compounds can, at certain concentration, indirectly or directly

constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to storm drains. Dirt, grease, and grime retained in the leaning fluid or rinse water may also absorb levels of organic compounds that are harmful or hazardous to aquatic live (OC 2003).

Sediments – Sediments are solid materials that are eroded from the land surface. Sediments can increase turbidity, clog fish gills, reduce spawning habitat, lower young aquatic organisms survival rates, smother bottom dwelling organisms, and suppress aquatic vegetation growth.

Trash and Debris – Trash (such as paper, plastic, polystyrene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste products on the landscape. The presence of trash and debris may have significant impact on the recreational value of a water body and aquatic habitat. Trash impacts water quality by increasing biochemical oxygen demand.

Oxygen – Demanding Substances – This category includes biodegradable organic material as well as chemicals that react with dissolved oxygen in water to form other compounds. Proteins, carbohydrates, and fats are examples of biodegradable organic compounds. Compounds such as ammonia and hydrogen sulfide are examples of oxygen-demanding compounds. The oxygen demand of a substance can lead to the depletion of dissolved oxygen in a water body and possibly the development of septic conditions. A reduction of dissolved oxygen is detrimental to aquatic life and can generate hazardous compounds such as hydrogen sulfides.

Oil and Grease – Oil and grease in water bodies decreases the aesthetic value of the water body, as well as the water quality. Primary sources of oil and grease are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids.

IV. Hydrologic Conditions of Concern

The proposed residence and associated site improvements conditions B, and C.

Condition B – The residence, appurtenances, and drainage swales disturbs 84.5% of the 0.17 acre site or 0.14acres.

Condition C – The flows from the proposed house and driveways will not substantially increase the off site pre-development flows for the 2-year, 24 hour and 10-year 24 hour rainfall events. All water from the new proposed development will be treated on-site as part of the structural BMPs.

The site is designated as a Priority site per Section A-7 Figure A-7-2 (6) Impervious surface of 2,500 square feet or more located within, directly adjacent to (within 200 feet) or discharging directly to receiving water within Environmentally Sensitive Areas (Upper Newport Bay)

V. Best Management Practices

V.1 SITE DESIGN BMPS

Table 1. Site Design BMPs

Design Concept	Technique	Specific BMP	Included		
			Yes	No	N/A
Site Design Concept 1	*Minimize Urban Runoff*	Maximize the permeable area (See Section 4.5.1 of the WQMP).	X		
		Incorporate landscaped buffer areas between sidewalks and streets.	X		
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.			X
		Use natural drainage systems.			X
		Where soils conditions are suitable, use perforated pipe or gravel filtration pits for low flow infiltration.	X		
		Construct onsite ponding areas or retention facilities to increase opportunities for infiltration consistent with vector control objectives.	X		
		Other comparable and equally effective site design concepts as approved by the Co-Permittee.	X		

Table 1. Site Design BMPs (Cont.)

Design Concept	Technique	Specific BMP	Included		
			Yes	No	N/A
Site Design Concept 2	*Minimize Impervious Footprint*	Maximize the permeable area (See Section 4.5.1 of the WQMP).	X		
		Construct walkways, trails, patios, overflow parking lots, alleys, driveways, low-traffic streets and other low -traffic areas with open-jointed paving materials or permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials.	X		
		Construct streets, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and a walk able environment for pedestrians are not compromised.	X		
		Reduce widths of street where off-street parking is available.			X
		Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.	X		
Site Design Concept 3	*Conserve Natural Areas*	Other comparable and equally effective site design concepts as approved by the Co-Permittee			X
		Conserve natural areas (See WQMP Section 4.5.1).	X		
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.	X		
		Use natural drainage systems.			X
		Other comparable and equally effective site design concepts as approved by the Co-Permittee			X

Table 1. Site Design BMPs (Cont.)

Design Concept	Technique	Specific BMP	Included		
			Yes	No	N/A
Site Design Concept 4	*Minimize Directly Connected Impervious Areas (DCIAs)*	Residential sites must be designed to contain and r direct roof runoff to vegetative swales or buffer areas, where feasible.	X		
		Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping.	X		
		Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales.	X		
		Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.			X
		Urban curb/swale system: street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter.			X
		Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to MS4s.	X		
		Design driveways with shared access, flared (single lane at street) or wheel strips (paving only under tires); or, drain into landscaping prior to discharging to the MS4.			X
		Uncovered temporary or guest parking on private residential lots may be paved with a permeable surface, or designed to drain into landscaping prior to discharging offsite.	X		
		Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.	X		

		Overflow parking (parking stalls provided in excess of the Co-Permittee's minimum parking requirements) may be constructed with permeable paving.			X
		Other comparable and equally effective design concepts as approved by the Co-Permittee (Note: Additional narrative required describing BMP and how it addresses Site Design concept).			X

The non-applicable BMPs include:

Urban setting, so no rural vegetated swales exist.

Urban biofilters and vegetated swales not a part or MS4 facilities.

Driveways cannot be shared, and existing driveways and parking areas are continuous without gravel tire strips.

Project Site Design BMPs:

The proposed residence discharge runoff from the roof, walkways and driveway/parking areas directly to natural floored drainage trenches after passing over vegetated infiltration areas adjacent to the residence in the vegetation buffer area. Roof drains will direct the runoff toward the natural grass areas on south, west and east sides of the residence.

The runoff will be retained by catch basin with treatment structural BMP's and the landscape buffer area. Overflow and drainage swale water will be directed toward the catch basins and proposed landscaped buffers to the south and east. Peak and overflows will exit the site via the 6-inch drain pipe to off-site storm drain facilities.

V.2 SOURCE CONTROL BMPS

Table 2. Source Control BMPs

BMP Name	Check One		If not applicable, state brief reason
	Included	Not Applicable	
Non-Structural Source Control BMPs			
Education for Property Owners, Operators, Tenants, Occupants, or Employees	X		
Activity Restrictions	X		
Irrigation System and Landscape Maintenance	X		
Common Area Litter Control	X		
Street Sweeping Private Streets and Parking Lots	X		
Drainage Facility Inspection and Maintenance	X		
Structural Source Control BMPs			
MS4 Stenciling and Signage		X	MS4 lies outside of project in public area
Landscape and Irrigation System Design	X		
Protect Slopes and Channels	X		
Provide Community Car Wash Racks		X	No car washing on-site
Properly Design:			
Fueling Areas		X	No fueling areas on-site
Air/Water Supply Area Drainage	X		No on-site facilities
Trash Storage Areas	X		
Loading Docks		X	No loading docks on-site
Maintenance Bays		X	No bays on-site
Vehicle and Equipment Wash Areas		X	No vehicle washing areas
Outdoor Material Storage Areas		X	No outdoor storage areas
Outdoor Work Areas or Processing Areas		X	No outdoor work areas
Provide Wash Water Controls for Food Preparation Areas	X		Indoor within areas

Appendix D includes copies of the educational materials that will be used in implementing this project-specific WQMP.

V.3 TREATMENT CONTROL BMPS

The future single family residence will employ a detention catch basin with treatment BMP's included. Roof water will be directed to the south and east side of the building landscape buffer zone consisting of a lawn and vegetated swale area. Trash bins and receptacles across the site and stored in the alley way will contain trash and debris.

Table 3: Treatment Control BMP Selection Matrix

Pollutant of Concern	Treatment Control BMP Categories[9]							
	Veg. Swale /Veg. Filter Strips	Detention Basins[2]	Infiltration Basins & Trenches/Porous Pavement[3][10]	Wet Ponds or Wetlands	Sand Filter or Filtration	Water Quality Inlets	Hydrodynamic Separator Systems [4]	Manufactured/ Proprietary Devices
Sediment/Turbidity Y x □	H/M x	M x	H/M	H/M	H/M	L	H/M (L for turbidity)	U
Nutrients Y x □	L x	M x	H/M	H/M	L/M	L	L	U
Organic Compounds Y x □	U x	U x	U	U	H/M	L	L	U
Trash & Debris	L	M	U	U	H/M	M	H/M	U

Y □								x
Oxygen Demanding Substances Y □	L x	M x	H/M	H/M	H/M	L	L	U
Bacteria & Viruses Y □	U	U x	H/M	U	H/M	L x	L	U
Oils & Grease Y □	H/M x	M x	U	U	H/M	M	L/M	U
Pesticides (non-soil bound) Y	U x	U x	U	U	U	L	L	U
Metals Y	H/M x	M x	H	H	H	L	L	U

Abbreviations:

L: Low removal efficiency H/M: High or medium removal efficiency U: Unknown removal efficiency

Notes:

(1) Periodic performance assessment and updating of the guidance provided by this table may be necessary.

(2) Includes grass swales, grass strips, wetland vegetation swales, and bioretention.

(3) Includes extended/dry detention basins with grass lining and extended/dry detention basins with impervious lining. Effectiveness based upon minimum 36-48-hour drawdown time.

(4) Includes infiltration basins, infiltration trenches, and porous pavements.

(5) Includes permanent pool wet ponds and constructed wetlands.

(6) Includes sand filters and media filters.

(7) Also known as hydrodynamic devices, baffle boxes, swirl concentrators, or cyclone separators.

(8) Includes proprietary stormwater treatment devices as listed in the CASQA Stormwater Best Management Practices Handbooks, other stormwater treatment BMPs not specifically listed in this WQMP, or newly developed/emerging stormwater treatment technologies.

(9) Project proponents should base BMP designs on the City of Newport Beach and Orange County Stormwater Quality Best Management Practice Design Handbook. However, project proponents may also wish to reference the California Stormwater BMP Handbook – New Development and Redevelopment. The Handbook contains additional information on BMP operation and maintenance.

(10) Note: Projects that will utilize infiltration-based Treatment Control BMPs (e.g., Infiltration Basins, Infiltration Trenches, Porous Pavement) must include a copy of the property/project soils report as Appendix E to the project-specific WQMP. The selection of a Treatment Control BMP (or BMPs) for the project must specifically consider the effectiveness of the Treatment Control BMP for pollutants identified as causing an impairment of Receiving Waters to which the project will discharge Urban Runoff.

V.4 EQUIVALENT TREATMENT CONTROL ALTERNATIVES

Not applicable

V.5 REGIONALLY-BASED TREATMENT CONTROL BMPS

Not applicable

VI. Operation and Maintenance Responsibility for Treatment Control BMPs

The initial design and construction of the concrete catch basins will be the responsibility of the design engineer (ESI, LLC) over seeing the construction operations. Drainage devices such as roof gutters and down drains will be the responsibility of the general contractor.

The O & M of the structural and treatment control BMPs is the responsibility of Robert Murphy.

Trash control will take place on a weekly basis for receptacles and trash bin pick up. Daily trash removal site wide will be performed by individual home owners.

Record of the structural maintenance will be maintained by home owners.

Frequency of inspection and maintenance of structural and treatment BMPs will be on a weekly basis for the trash, lawn maintenance, and vegetated swales. The roof gutters, down drains and paved swales will be done as needed, and before the advent of the rainy season in November.

VII. Funding

Funding for the structural and treatment control BMPs will be the responsibility of Robert Murphy.

Public facilities located off site are the responsibility of the City of Newport Beach.

Appendix A

Conditions of Approval

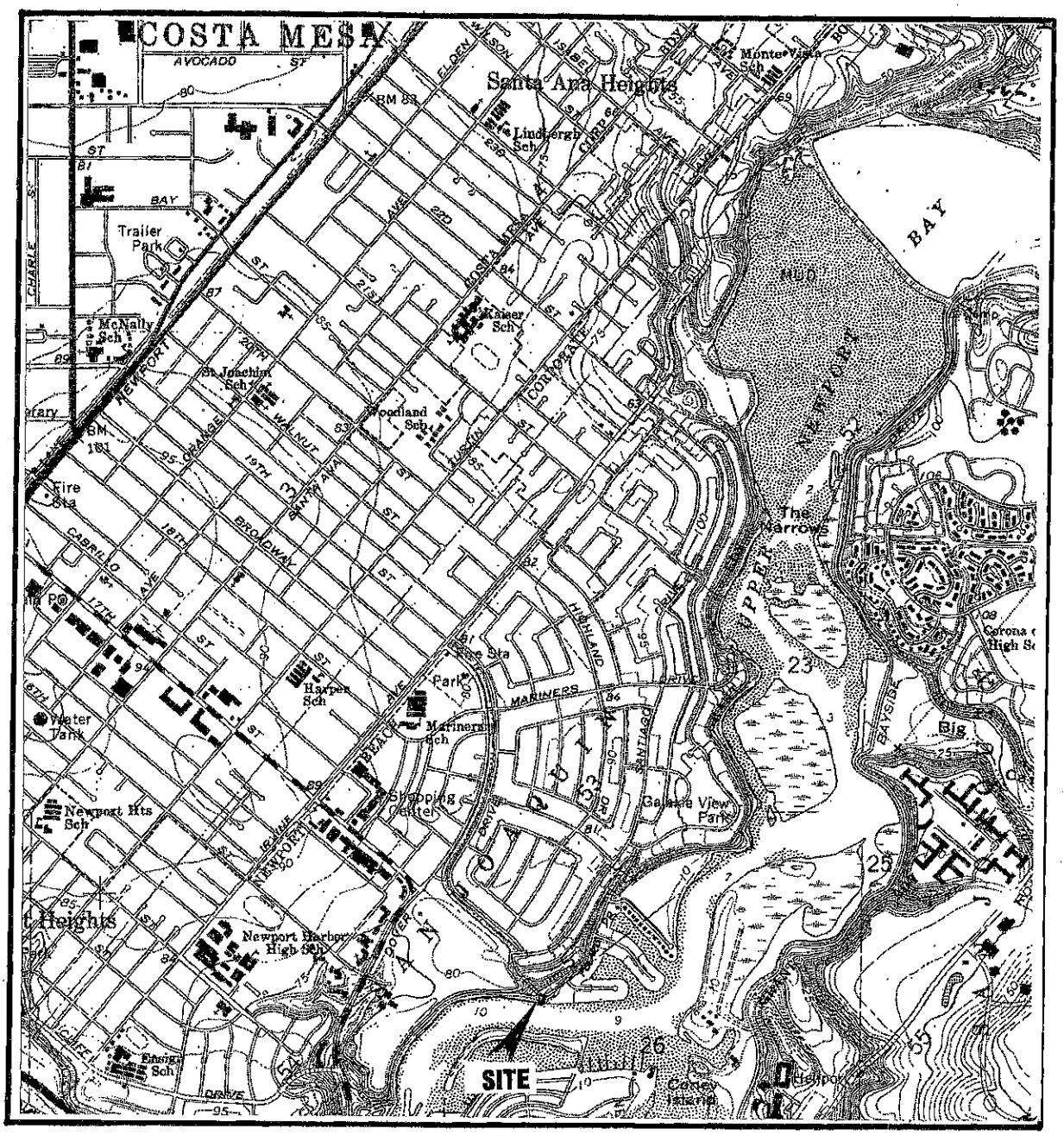
Planning Commission Resolution

Dated

Appendix B

Vicinity Map, WQMP Site Plan, and Receiving Waters Map

INDEX MAP



INDEX MAP
OF
0.17+/- ACRES, APN 117-721-31
1014 POLARIS DRIVE, NEWPORT BEACH
ORANGE COUNTY, CALIFORNIA

SOURCE: U.S.G.S. 7 ½ MIN. QUAD. NEWPORT BEACH, 1967 (PR 1988)

Appendix C

Supporting Detail Related to Hydraulic Conditions of Concern

Stormwater Quality Design Flow (SQDF) Calculation

The calculation procedure follows the outline in Attachment A in Exhibit A-11.
The Stormwater Quality Design Flow in Orange County is defined as $Q_{P,SQDF}$

The rational method was utilized for calculating the impact on BMP's

Where $Q_{P,\ SQDF}$ = CIA

From Table A-1 the impervious area of 84.5% produces a C of 0.81.
The intensity I = 0.2in/hr
The area A for the site is a total of 0.17 +/- acres. Based on the soils, the site is underlain by clean fine sands and silty sands. The infiltration of the 12.5% pervious areas has been disregarded to provide an element of design safety.

Therefore Design Flow = CIA or 0.028cfs

Assuming the proposed on-site structural BMP consisting of a 18-inch wide by 12-inch deep French drain with grate, the 133 foot long drains will capture 0.116cfs or approximately twice the anticipated runoff for the 1 hour storm. Utilizing one 4-inch diameter pipes in the French drain with a slope of 0.64% to the existing Polaris Drive gutter with invert of 10.88 feet will flow at 87% of capacity at a velocity of 0.68 fps.

Stormwater Quality Design Storm Volume (SQDV) Calculations
Method I

Where $V_b = CIA_t$

Upper Newport Beach Harbor has a precipitation (I) of 0.65 inch from Fig. A-1 of A-7.11 for the 24-hour, 85th percentile rainfall

Therefore V_b = (0.81) (0.65in) (0.17ac) = 266.6ft^3 and minimum 48-hr drawdown

Appendix D

Educational Materials

Appendix E

Soils Report

Appendix F

Treatment Control BMP Sizing Calculations and Design Details

Appendix G

AGREEMENTS – CC&RS, COVENANT AND AGREEMENTS AND/OR OTHER MECHANISMS FOR ENSURING ONGOING OPERATION, MAINTENANCE, FUNDING AND TRANSFER OF REQUIREMENTS FOR THIS PROJECT-SPECIFIC WQMP

Appendix H

PHASE 1 ENVIRONMENTAL SITE ASSESSMENT – SUMMARY OF SITE REMEDIATION CONDUCTED AND USE RESTRICTIONS